

Solar activity reached high levels during the week, in fact the highest levels of activity since 2013 began. Between 13 and 14 May, newly-numbered Region 1748 (N11, L=296, class/area=Eki/310) produced an X2/1n flare at 13/1605Z and an X3/2b flare at 14/0111Z. Both events produced several radio emissions. Three Tenflares were observed at 14/0115Z (640 sfu), 14/0141Z (190 sfu), and 14/0203Z (370 sfu). A Type-II radio sweep was observed at 14/0107Z with an estimated velocity of 1514 km/s, in conjunction with a Type-IV radio sweep at 14/0113Z. SDO/AIA 193A showed a flare on the East limb at N12 from 14/0009-0154 and 14/0206-0224Z. A dimming and wave was observed over the east hemisphere and North Pole. Two distinct halo coronal mass ejections (CMEs) were subsequently observed on LASCO imagery. The first appeared in C2 coronagraph imagery at 14/0125Z and grew to a full HALO CME by 14/0224Z. The second event appeared at 14/0200Z with loop edge over the East and expanded to a partial HALO 280 degrees in width.

Solar activity remained at high levels on 15 May. Region 1748 grew to a Dki/beta-gamma-delta and produced an X1/2n flare at 15/0148Z associated with a Type II radio sweep (estimated shock speed 501 km/s), a Type IV radio sweep, a 440 sfu Tenflare; and a fast, assymetric halo CME. The CME speed was observed in LASCO C2 coronagraph imagery at 15/0148Z and expanded to a full HALO CME by 15/0248Z. SDO/AIA 193/211/304 showed the flare at 15/0124-0212Z which produced a faint dimming in the Northeast and North direction and a wave over the East hemisphere. The CME had an earthward component and its western flank reached Earth on 18 May at 0112Z.

Activity declined to moderate levels on 16 May with a single M1 flare from Region 1748 at 16/2153Z. Moderate levels continued through 17 May when Region 1748 produced an M3/2b flare at 17/0857Z. Type II (376 km/s) and Type IV radio bursts, as well as a 420 sfu Tenflare, were observed with this event. At 17/0912Z, LASCO/C2 coronagraph imagery observed a CME erupting from the east limb. It grew to a full halo CME by 17/0948Z and was estimated to be moving at approximately 1498 km/s. The CME reached Earth on 19 May at 2221Z.

The remainder of the week was dominated by low levels of activity as Region 1748 shrank to less than half its largest extent. The largest flare of the latter part of the week was a C9 observed on the east limb at 19/1750Z. The other regions on the visible disk throughout the week were relatively inactive, producing only low-level C-class activity.

A 10 MeV proton flux greater than 10 pfu at geosynchronous orbit event began at 15/1325Z, reached a maximum flux of 41 pfu at 17/1720Z, and ended at 18/1445Z. The 10 MeV flux remains enhanced at the time of this report. The event was attributed to the X1/2n flare at 15/0148Z.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels all week.

Geomagnetic field activity ranged from quiet to minor storm levels with the arrival of two CMEs



during the week. The first CME, which was observed leaving the sun on 15 May, passed the ACE spacecraft at 18/0023Z and arrived at Earth at 18/0112Z with a 31nT sudden impulse. Activity reached minor storm levels by 18/0300Z and remained there through the end of the 0300-0600Z synoptic period. Activity then dropped to active, unsettled, then quiet levels during the subsequent periods. The following evening, active levels were observed during the 0000-0300Z synoptic period.

The second CME, which left the sun on 17 May, passed the ACE spacecraft at 19/2221Z and arrived at Earth at 19/2306Z with a 29nT sudden impulse. Activity increased to active levels during the 2100-0000Z synoptic period.

Space Weather Outlook 20 May - 15 June 2013

Solar activity is expected to be low to moderate throughout the forecast period. High levels of activity are possible through 25 May and again after 7 June associated with Region 1748.

There is a chance for proton events at geosynchronous orbit, particularly through 25 May and again after 7 June associated with Region 1748.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels from 24-31 May associated with a recurrent coronal hole high speed stream.

Geomagnetic field activity is expected to reach minor to major storm levels on 20 May in response to the 17 May coronal mass ejection. In the absence of any Earth-directed coronal mass ejections, the remainder of the forecast period is expected to be characterized by quiet to unsettled levels of activity with the possible exception of 28 May, when another geoeffective coronal hole high speed stream becomes geoeffective and brings active levels.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
13 May	150	144	1380	C1.1	10	1	2	19	1	0	0	0
14 May	148	142	1200	B7.1	3	0	1	11	0	0	0	0
15 May	146	186	1180	B7.7	4	0	1	3	0	1	0	0
16 May	145	212	1290	B6.0	4	1	0	1	1	0	0	0
17 May	136	198	990	B5.7	1	1	0	9	0	1	0	0
18 May	132	146	700	B4.8	5	0	0	10	0	0	0	0
19 May	135	113	590	B5.8	9	0	0	12	1	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day -sr)			Electron Fluence (electrons/cm ² -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
13 May	2.7e+05	1.2e+04	2.7e+03		2.0e+07	
14 May	1.7e+06	5.8e+04	2.8e+03		3.9e+06	
15 May	5.8e+06	8.1e+05	2.8e+03		3.0e+06	
16 May	2.1e+07	2.1e+06	2.6e+03		6.6e+06	
17 May	5.4e+07	2.3e+06	3.0e+03		9.6e+06	
18 May	5.2e+07	1.1e+06	2.3e+03		4.5e+06	
19 May	2.1e+07	4.0e+05	2.2e+03		2.2e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
13 May	6	1-1-1-1-2-3-2-1	3	1-1-2-0-0-2-1-0	6	1-1-1-1-1-3-1-1
14 May	7	1-1-2-2-3-2-2-2	22	2-1-3-5-5-5-2-1	8	2-1-2-3-3-2-2-2
15 May	10	0-1-2-3-4-2-3-2	10	1-1-2-2-5-2-1-0	9	1-1-2-3-3-2-2-1
16 May	12	0-0-0-0-0-3-2-3	11	3-4-2-1-2-2-1-3	14	3-4-2-2-3-4-2-3
17 May	9	2-3-2-2-2-2-3-2	14	3-3-1-5-3-2-2-1	9	2-3-2-1-2-3-3-2
18 May	16	4-5-3-2-2-2-2-2	30	5-6-4-5-3-2-2-2	21	5-5-4-3-2-2-3-2
19 May	11	3-2-2-2-2-2-2-4	30	3-2-5-4-5-6-2-2	12	4-2-3-2-2-3-2-4



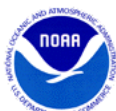
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
13 May 0206	ALERT: X-ray Flux exceeded M5	13/0204
13 May 0237	SUMMARY: X-ray Event exceeded X1	13/0153 - 0232
13 May 0241	SUMMARY: 10cm Radio Burst	13/0208 - 0222
13 May 0310	ALERT: Type II Radio Emission	13/0210
13 May 1559	ALERT: X-ray Flux exceeded M5	13/1557
13 May 1649	SUMMARY: 10cm Radio Burst	13/1553 - 1618
13 May 1652	SUMMARY: X-ray Event exceeded X1	13/1548 - 1616
13 May 1701	ALERT: Type II Radio Emission	13/1557
13 May 1701	ALERT: Type IV Radio Emission	13/1557
14 May 0108	ALERT: X-ray Flux exceeded M5	14/0105
14 May 0128	ALERT: Type IV Radio Emission	14/0113
14 May 0137	SUMMARY: 10cm Radio Burst	14/0104 - 0120
14 May 0138	ALERT: Type II Radio Emission	14/0107
14 May 0144	SUMMARY: X-ray Event exceeded X1	13/2359 - 14/0120
14 May 0210	SUMMARY: 10cm Radio Burst	14/0134 - 0143
14 May 0249	SUMMARY: 10cm Radio Burst	14/0200 - 0210
15 May 0143	ALERT: X-ray Flux exceeded M5	15/0141
15 May 0202	ALERT: Type IV Radio Emission	15/0135
15 May 0203	SUMMARY: 10cm Radio Burst	15/0133 - 0150
15 May 0211	SUMMARY: X-ray Event exceeded X1	15/0125 - 0158
15 May 0222	ALERT: Type II Radio Emission	15/0137
15 May 1233	WARNING: Proton 10MeV Integral Flux > 10pfu	15/1232 - 16/1200
15 May 1347	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	15/1335
16 May 0341	WARNING: Geomagnetic K = 4	16/0345 - 0900
16 May 0401	ALERT: Geomagnetic K = 4	16/0358
16 May 1131	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	15/1232 - 17/1200
16 May 1607	WARNING: Geomagnetic K = 4	16/1605 - 2100
16 May 1627	ALERT: Geomagnetic K = 4	16/1623

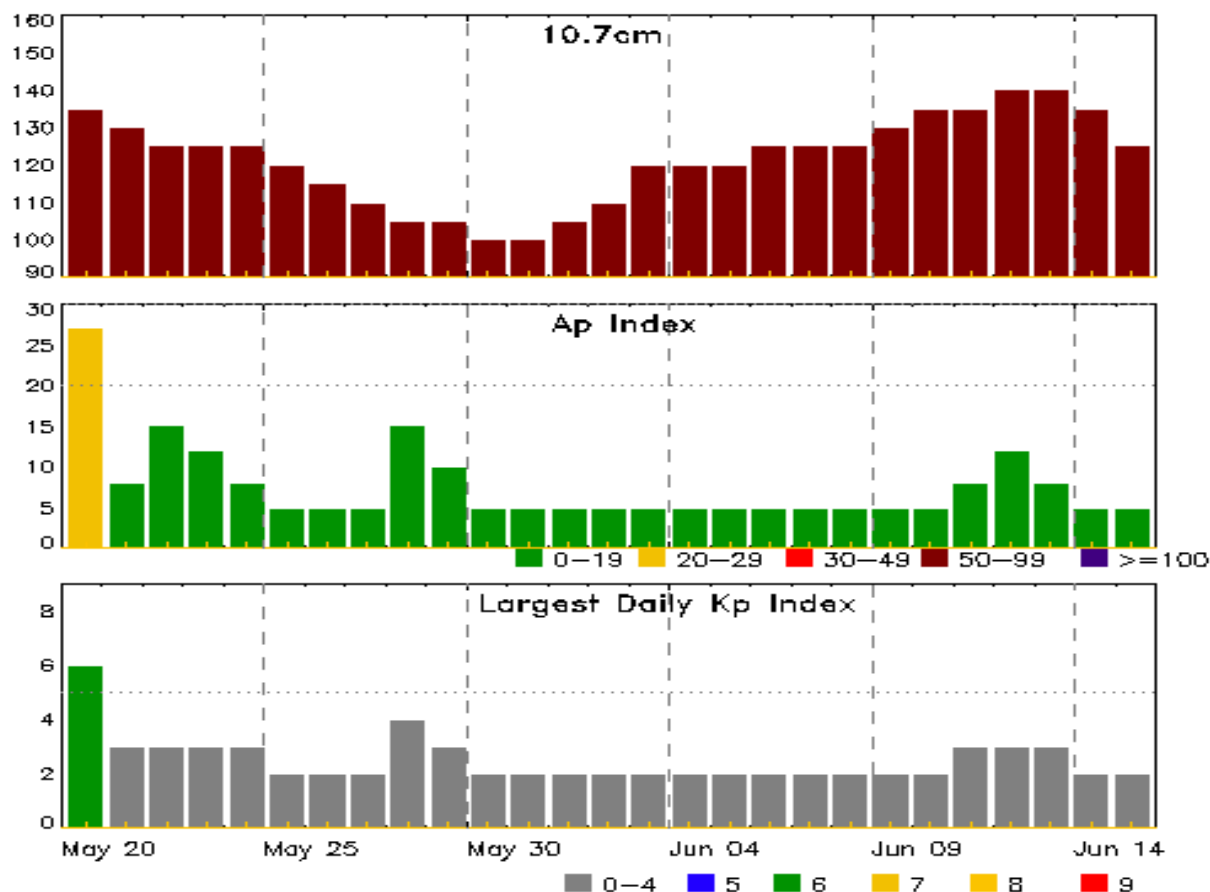


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
16 May 2033	EXTENDED WARNING: Geomagnetic K = 4	16/1605 - 17/0300
17 May 0825	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	15/1232 - 18/2300
17 May 0926	SUMMARY: 10cm Radio Burst	17/0848 - 0912
17 May 0927	ALERT: Type IV Radio Emission	17/0850
17 May 0927	ALERT: Type II Radio Emission	17/0850
17 May 2124	WATCH: Geomagnetic Storm Category G2 predicted	
18 May 0031	WARNING: Geomagnetic Sudden Impulse expected	18/0115 - 0145
18 May 0033	WARNING: Geomagnetic K = 4	18/0100 - 0600
18 May 0121	SUMMARY: Geomagnetic Sudden Impulse	18/0112
18 May 0133	ALERT: Geomagnetic K = 4	18/0131
18 May 0254	WARNING: Geomagnetic K = 5	18/0252 - 0600
18 May 0302	EXTENDED WARNING: Geomagnetic K = 4	18/0100 - 1200
18 May 0302	ALERT: Geomagnetic K = 5	18/0300
18 May 0531	EXTENDED WARNING: Geomagnetic K = 5	18/0252 - 0900
18 May 2207	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	15/1325 - 18/1445
19 May 0203	WARNING: Geomagnetic K = 4	19/0205 - 1200
19 May 0207	ALERT: Geomagnetic K = 4	19/0205
19 May 1149	EXTENDED WARNING: Geomagnetic K = 4	19/0205 - 20/0100
19 May 1855	WATCH: Geomagnetic Storm Category G2 predicted	
19 May 2229	WARNING: Geomagnetic Sudden Impulse expected	19/2251 - 2351
19 May 2317	WARNING: Geomagnetic K = 5	19/2320 - 20/0700
19 May 2317	EXTENDED WARNING: Geomagnetic K = 4	19/0205 - 20/1300
19 May 2322	SUMMARY: Geomagnetic Sudden Impulse	19/2306



Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
20 May	135	27	6	03 Jun	120	5	2
21	130	8	3	04	120	5	2
22	125	15	3	05	120	5	2
23	125	12	3	06	125	5	2
24	125	8	3	07	125	5	2
25	120	5	2	08	125	5	2
26	115	5	2	09	130	5	2
27	110	5	2	10	135	5	2
28	105	15	4	11	135	8	3
29	105	10	3	12	140	12	3
30	100	5	2	13	140	8	3
31	100	5	2	14	135	5	2
01 Jun	105	5	2	15	125	5	2
02	110	5	2				

Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
13 May	0153	0217	0232	X1.7	0.230			1748	920	320	1	
13 May	1157	1203	1209	M1.3	0.006			1748				
13 May	1548	1605	1616	X2.8	0.230	1N	N11E85	1748	54	520	2	2
14 May	0000	0111	0120	X3.2	0.220			1748	2200	640	1	1
15 May	0125	0148	0158	X1.2	0.120	2N	N12E64	1748	430	440	1	2
16 May	2136	2153	2203	M1.3	0.012	1N	N13E41	1748				
17 May	0843	0857	0919	M3.2	0.044	2B	N12E57	1748	1500	450	2	2

Flare List

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
13 May	0032	0039	0046	C9.3			1748
13 May	0153	0217	0232	X1.7			1748
13 May	0453	0455	0500		SF	N19E54	1745
13 May	0702	0706	0709	C2.4			
13 May	0802	0807	0811	C2.0			
13 May	0835	0838	0844	C4.5	SF	N14E48	1745
13 May	0924	0929	0937	C2.8			1748
13 May	1034	1037	1040	C1.7			
13 May	1157	1203	1209	M1.3			1748
13 May	1247	1252	1300	C4.0			1748
13 May	1355	1440	1510	C5.3			1748
13 May	1459	1500	1509		SF	N14E85	1748
13 May	B1520	U1520	A1523		SF	N14E85	1748
13 May	1524	1526	1532		SF	N10E86	1748
13 May	1548	1601	1637	X2.8	1N	N11E85	1748
13 May	1645	1648	1653		SF	N10E88	1748
13 May	1737	1738	1743		SF	N10E88	1748
13 May	1905	1909	1928		SF	N13E50	1745
13 May	1918	1918	1925		SF	N11E86	1748
13 May	2047	2047	2054		SF	N11E87	1748
13 May	2111	2120	2124		SF	N11E85	1748
13 May	2115	2116	2126		SF	N12E38	1745
13 May	2126	2128	2129	C2.9	SF	N11E86	1748
13 May	2145	2150	2156		SF	N22E05	1743



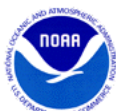
Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
13 May	2150	2221	2229		SN	N11E82	1748
13 May	2158	2205	2211	C8.3	SF	N12E37	1745
13 May	2243	2243	2246		SF	N12E85	1748
13 May	2256	2304	2329		SF	N11E35	1745
13 May	2326	2328	2335		SF	N11E84	1748
14 May	0000	0111	0120	X3.2			1748
14 May	0442	0446	0455		SF	N13E80	1748
14 May	B0606	0608	0618		SF	N15E41	1745
14 May	1218	1222	1224	C1.8	SF	N13E77	1748
14 May	1253	1302	1325		SF	N11E73	1748
14 May	1413	1414	1416		SF	N10E27	1745
14 May	1606	1621	1626		SF	N11E72	1748
14 May	1759	1759	1804		SF	S18E28	1747
14 May	1816	1823	1830		SF	N11E72	1748
14 May	1830	1841	1902		SF	N11E72	1748
14 May	2029	2029	2031		SF	N11E72	1748
14 May	2038	2042	2049		SF	N11E72	1748
14 May	2156	2204	2221	C4.3			1748
14 May	2246	2254	2258	C2.0			1743
15 May	0124	0140	0230	X1.2	2N	N12E64	1748
15 May	0907	0908	0910		SF	N14E57	1748
15 May	1030	1031	1037		SF	N16E24	1745
15 May	1208	1237	1308	C1.6	SF	N12E57	1748
15 May	1327	1330	1333	C1.4			1745
15 May	1609	1613	1618	C1.1			1738
15 May	2226	2231	2241	C1.1			1748
16 May	1214	1217	1226	C1.2			1744
16 May	1537	1549	1600	C1.1			1752
16 May	1830	1835	1840	C1.1			1748
16 May	1917	1924	1930	C4.8	SF	N13E41	1748
16 May	2136	2153	2203	M1.3	1N	N13E41	1748
17 May	0437	0441	0443	C5.0	SF	N06W29	1744
17 May	0843	0857	0919	M3.2	2B	N12E57	1748
17 May	1059	1101	1107		SF	N19W44	1748
17 May	1103	1104	1109		SF	N16E32	1748
17 May	1238	1241	1248		SF	N14W03	1745
17 May	1249	1254	1255		SF	N17W02	1745
17 May	1324	1326	1339		SF	N12W04	1745



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
17 May	1503	1506	1518		SF	S10W35	1750
17 May	1522	1524	1533		SF	S09W36	1750
17 May	1607	1609	1620		SF	S13W21	
18 May	0003	0010	0011		SF	S10W41	1750
18 May	0012	0013	0016		SF	S18W15	1747
18 May	0036	0042	0106		SF	N11E24	1748
18 May	0330	0345	0356	C6.0	SF	N11E23	1748
18 May	0429	0429	0443		SF	N12E22	1748
18 May	0505	0518	0531	C1.2	SF	N18W57	1743
18 May	0632	0656	0709	C1.3	SF	N17W42	1752
18 May	0827	0835	0841	B9.7			
18 May	1437	1437	1440		SF	S17E88	
18 May	1509	1513	1519		SF	N12E20	1748
18 May	1812	1822	1825	C1.1	SF	N11E19	1748
18 May	2016	2118	2155	C2.9			
19 May	0833	0833	0837		SF	S11W59	1750
19 May	0835	0838	0840	C1.2	SF	N19W69	1752
19 May	0908	0915	0924	C3.4	1F	S11W58	1750
19 May	1142	1150	1157	C1.1			1750
19 May	1222	1225	1229	C1.4	SF	S09W63	1750
19 May	1411	1416	1434	C1.1	SF	S09W63	1750
19 May	1507	1515	1524	C6.3	SN	S09W63	1750
19 May	1706	1724	1735	C4.2			
19 May	1707	1750	1818	C9.9			
19 May	1725	1727	1731		SF	S09W65	1750
19 May	1738	1739	1742		SF	S09W65	1750
19 May	1903	1903	1905		SF	S09W65	1750
19 May	1950	1954	1956		SF	S09W66	1750
19 May	2111	2121	2126	C4.7	SF	S08W65	1750
19 May	2157	2159	2208		SF	N13E02	1748
19 May	2255	2259	2306		SF	S09W68	1750



Region Summary

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1738															
03 May	N16E63	87	30	1	Hsx	1	A								
04 May	N15E47	84	10	2	Cso	2	B								
05 May	N15E34	84	30	3	Cao	3	B								
06 May	N15E20	86	50	7	Cao	5	B								
07 May	N15E06	87	60	7	Cai	7	B								
08 May	N15W08	88	70	8	Cai	8	B	1				1			
09 May	N15W21	88	50	10	Cai	8	B								
10 May	N17W33	86	30	8	Cai	7	B								
11 May	N17W43	83	40	5	Cao	4	B								
12 May	N17W59	86	10	8	Bxo	4	B								
13 May	N20W62	75	10	1	Axx	2	A								
14 May	N20W76	76	plage												
15 May	N20W90	77	plage					1							
								2	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 87

<i>Region 1739</i>															
03 May	N13E75	75	150	10	Dac	13	B		1		1				
04 May	N13E57	74	110	6	Dac	5	BG	5			1				
05 May	N12E44	74	140	10	Dac	8	BG	7	1		12	1			
06 May	N12E30	76	110	10	Dai	7	BG	3			3				
07 May	N12E16	77	120	10	Dai	8	B	1							
08 May	N12E02	78	110	9	Dai	8	B								
09 May	N12W09	78	60	9	Dao	8	B								
10 May	N12W25	78	20	6	Cao	5	B	1			2	1			
11 May	N11W39	79	10	2	Bxo	2	B	1							
12 May	N11W53	80	0	1	Axx	1	A								
13 May	N11W67	80	plage												
14 May	N11W81	81	plage												
								18	2	0	19	2	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 78



Region Summary - continued

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1740															
04 May	S20E64	67	30	1	Hsx	1	A	1							
05 May	S21E50	68	20	1	Hrx	1	A								
06 May	S21E36	70	20	2	Cao	3	B								
07 May	S21E22	71	10	2	Hsx	2	A								
08 May	S21E08	72	10	2	Axx	2	A								
09 May	S21W06	72	plage												
10 May	S21W15	68	10	4	Bxo	4	B								
11 May	S21W26	66	10	1	Axx	1	A								
12 May	S21W39	66	10	1	Axx	1	A								
13 May	S21W53	66	plage												
14 May	S21W67	67	plage												
15 May	S21W81	68	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 72

Region 1741															
06 May	S20E59	45	10	3	Bxo	2	B	1			1				
07 May	S20E45	45	10	2	Axx	2	A								
08 May	S20E32	48	10	1	Axx	1	A								
09 May	S20E19	48	5	1	Axx	1	A								
10 May	S20E05	48	10	3	Bxo	2	B								
11 May	S21W05	45	50	5	Cao	11	B								
12 May	S23W18	45	30	6	Cao	9	B								
13 May	S21W29	42	10	3	Bxo	5	B								
14 May	S21W43	43	10	3	Bxo	5	B								
15 May	S21W57	44	plage												
16 May	S21W71	45	plage												
17 May	S21W85	46	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 48



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

Region 1742

09 May	N30E49	17	50	7	Dai	12	B	1			2				
10 May	N30E36	17	100	7	Dao	6	B	1							
11 May	N30E22	18	50	9	Dao	4	B								
12 May	N30E10	17	50	9	Cao	5	B								
13 May	N30W06	19	30	1	Hrx	1	A								
14 May	N29W19	18	10		Hrx	1	A								
15 May	N28W31	18	plage												
16 May	N28W45	19	plage												
17 May	N28W59	20	plage												
18 May	N28W73	20	plage												
19 May	N28W86	20	plage												
								2	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 19

Region 1743

09 May	N24E55	11	30	5	Hrx	2	A								
10 May	N24E43	12	20	3	Cao	5	B								
11 May	N24E29	11	10	3	Bxo	4	B								
12 May	N24E15	12	110	5	Dao	10	B	2							
13 May	N22E01	12	120	7	Dao	6	B				1				
14 May	N22W12	12	70	9	Dao	7	B	1							
15 May	N21W28	14	90	9	Dao	5	B								
16 May	N22W40	13	80	10	Cso	6	B								
17 May	N22W53	14	30	10	Dao	2	B								
18 May	N20W69	16	10	1	Axx	2	A	1							
19 May	N20W82	16	plage												
								4	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 12



Region Summary - continued

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1744															
09 May	N05E61	4	30	5	Dao	5	B	4			2				
10 May	N04E56	357	30	9	Dao	7	B	2			2				
11 May	N05E42	358	60	10	Dao	10	B	1			1				
12 May	N05E28	359	190	10	Dai	13	B	3							
13 May	N05E16	357	140	8	Dai	11	B								
14 May	N05W00	359	90	9	Dai	11	B								
15 May	N05W12	359	70	12	Cao	23	B								
16 May	N05W27	360	120	12	Cao	18	B	1							
17 May	N06W40	1	100	10	Dao	23	BG	1			1				
18 May	N06W54	1	70	9	Dao	5	B								
19 May	N06W67	1	50	6	Cao	3	B								
								12	0	0	6	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 359

Region 1745

10 May	N11E73	340	120	3	Hrx	1	A	4	2						
11 May	N11E62	338	300	5	Dki	5	B	1			2				
12 May	N14E51	336	600	12	Ekc	15	BG	5			1				
13 May	N13E38	335	550	10	Dkc	11	BG	2			6				
14 May	N13E24	335	430	10	Dkc	18	BG				2				
15 May	N13E12	334	390	13	Ekc	28	BG	1			1				
16 May	N12W01	334	350	13	Cki	20	B								
17 May	N13W15	336	300	10	Cko	10	B				3				
18 May	N14W27	334	210	8	Dao	11	B								
19 May	N13W40	334	180	5	Cao	8	B								
								13	2	0	15	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 334



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1746															
11 May	S27E63	335	210	5	Dso	2	B	3				3			
12 May	S27E50	337	270	8	Dhi	11	BG	1							
13 May	S28E39	334	230	7	Dsi	8	B								
14 May	S28E28	331	200	7	Dsi	7	B								
15 May	S27E14	333	250	5	Cso	8	B								
16 May	S27W01	334	230	6	Cso	10	B								
17 May	S27W14	335	160	7	Cso	7	B								
18 May	S27W26	333	120	6	Dso	4	B								
19 May	S27W40	334	140	6	Dso	5	B								
								4	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 334

Region 1747															
12 May	S18E48	338	10	2	Bxo	4	B								
13 May	S18E35	338	40	4	Cao	6	B								
14 May	S18E22	337	80	7	Cao	8	B				1				
15 May	S18E09	337	90	8	Cao	11	B								
16 May	S17W05	338	100	8	Cao	10	B								
17 May	S17W17	338	80	8	Dao	10	B								
18 May	S18W31	338	40	9	Cao	6	B				1				
19 May	S17W45	339	20	3	Hrx	2	A								
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 338

Region 1748															
13 May	N12E81	292	250	10	Dki	4	B	5	1	2	12	1			
14 May	N11E63	296	310	11	Eki	5	BGD	2		1	8				
15 May	N11E51	295	260	10	Dki	9	BGD	2		1	2		1		
16 May	N12E36	297	270	10	Dki	19	BGD	2	1		1	1			
17 May	N12E23	298	220	10	Dai	24	BGD		1		2		1		
18 May	N12E11	296	140	10	Dao	12	BD	2			5				
19 May	N12W00	294	110	16	Fao	23	BGD				1				
								13	5	4	31	2	2	0	0

Still on Disk.

Absolute heliographic longitude: 294



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

Region 1749

15 May	S23W40	27	10	4	Bxo	6	B								
16 May	S22W53	26	10	5	Bxo	6	B								
17 May	S22W66	27	30	5	Cro	4	B								
18 May	S22W78	25	10	4	Bxo	3	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 27

Region 1750

15 May	S11W13	360	10	3	Bxo	3	B								
16 May	S10W28	360	90	5	Cao	8	B								
17 May	S09W41	2	50	7	Cao	9	B				2				
18 May	S09W54	1	80	6	Dao	9	B				1				
19 May	S09W67	1	90	7	Dai	12	B	6			10	1			
								6	0	0	13	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 360

Region 1751

15 May	S23E23	323	10	3	Bxo	3	B								
16 May	S23E09	324	10	3	Bxo	6	B								
17 May	S23W01	322	0	2	Axx	2	A								
18 May	S23W15	322	plage												
19 May	S23W29	323	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 322

Region 1752

16 May	N18W28	1	30	4	Cro	9	B	1							
17 May	N18W40	1	20	4	Cro	7	B								
18 May	N18W52	359	20	5	Cro	4	B	1			1				
19 May	N18W66	360	plage					1			1				
								3	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 1

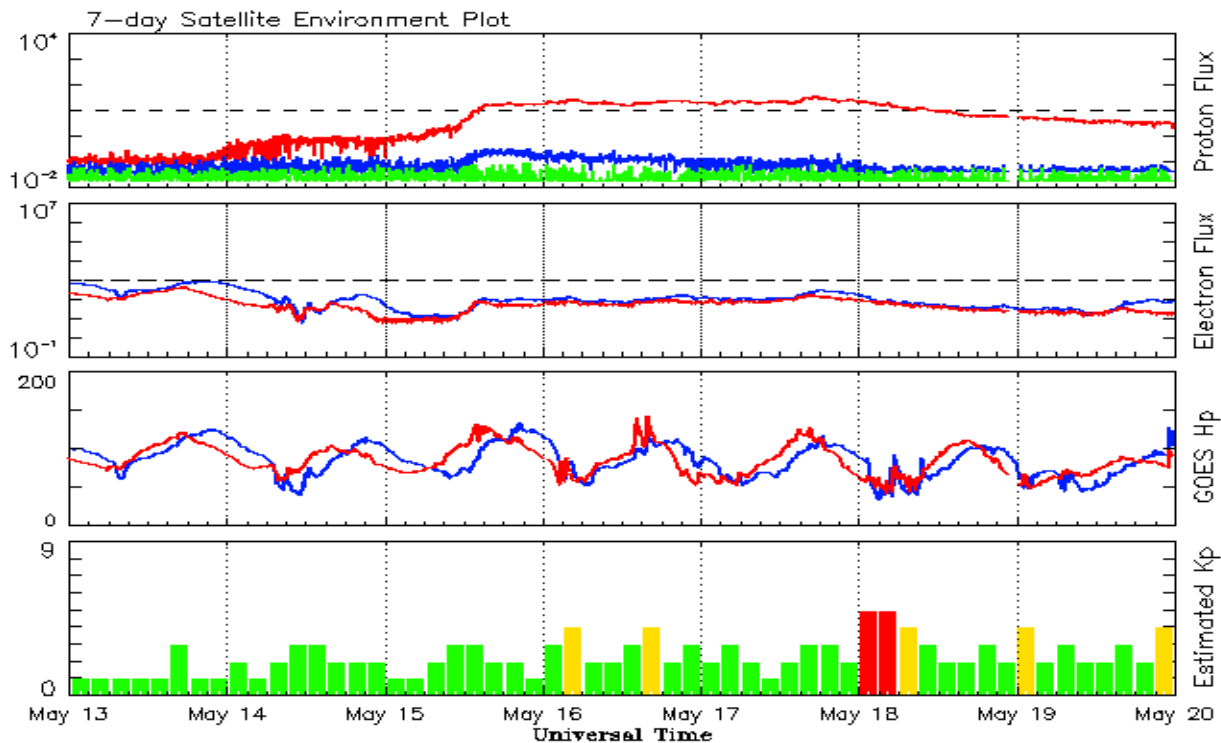


Recent Solar Indices (preliminary)
Observed monthly mean values

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2011									
May	61.4	41.6	0.68	69.0	47.6	95.9	105.6	9	7.5
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
2012									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.8	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.2	115.7	119.2	7	8.1
September	84.0	61.4	0.73	83.7	58.1	123.2	118.9	8	7.8
October	73.5	53.3	0.73	85.0	58.6	123.3	119.2	9	7.4
November	89.2	61.8	0.69			120.9		6	
December	60.4	40.8	0.68			108.4		3	
2013									
January	99.8	62.9	0.63			127.1		4	
February	60.0	38.0	0.63			104.4		5	
March	81.0	57.9	0.71			111.2		9	
April	112.8	72.4	0.64			125.0		5	

Note: Values are final except for the most recent 6 months which are considered preliminary.
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 13 May 2013*

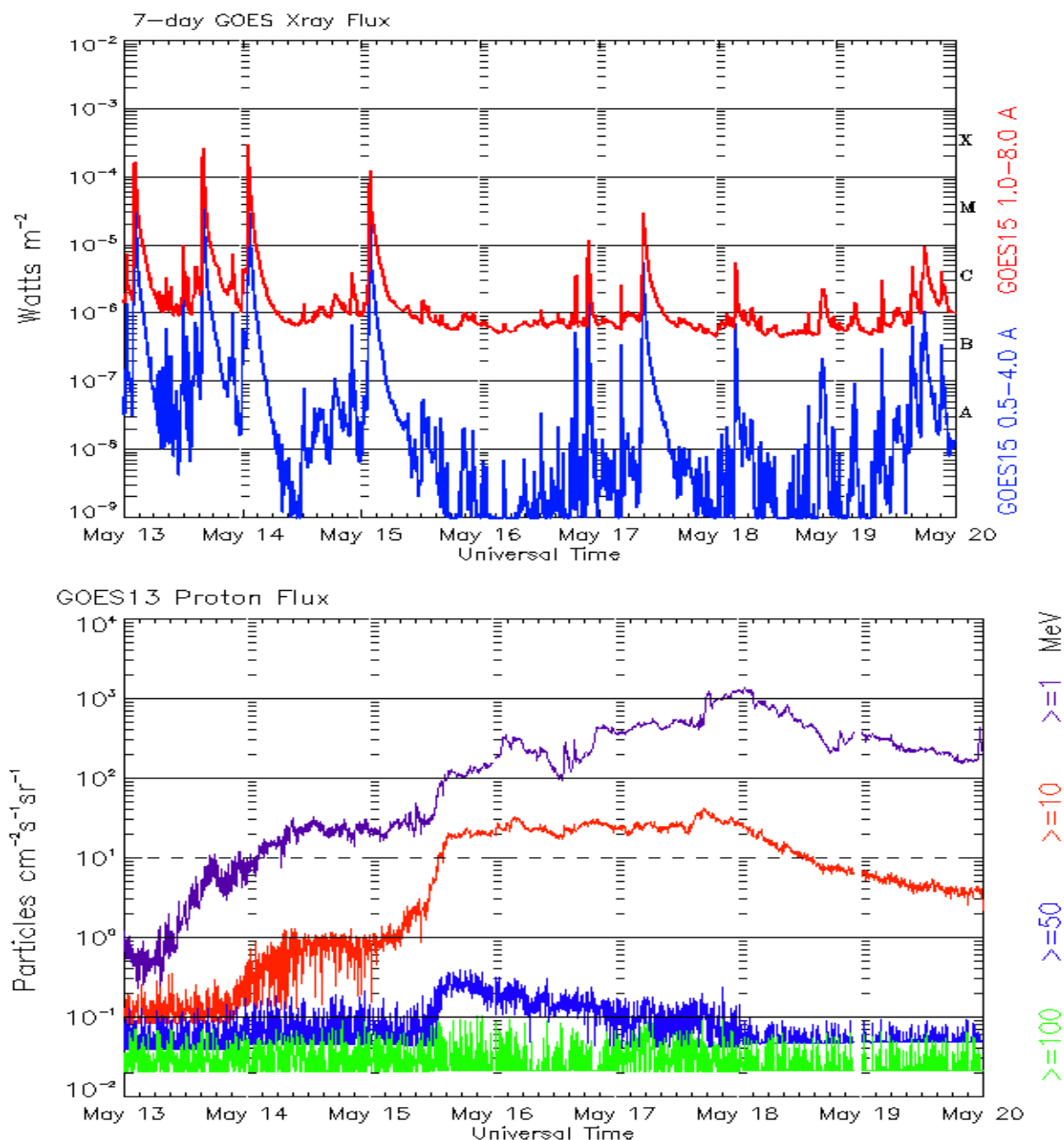
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



*Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 13 May 2013*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral flux units (pfu = protons/cm² -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned.
Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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